

SHIP PRODUCTION COMMITTEE
FACILITIES AND ENVIRONMENTAL EFFECTS
SURFACE PREPARATION AND COATINGS
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EDUCATION AND TRAINING

August 14, 2000
NSRP 0591
N1-98-1 Subtask 47

THE NATIONAL SHIPBUILDING RESEARCH PROGRAM

Metal Products and Machinery Effluent Limitation Guidelines Phase 1: Analysis of Current Data

U.S. DEPARTMENT OF THE NAVY
CARDEROCK DIVISION,
NAVAL SURFACE WARFARE CENTER

in cooperation with
National Steel and Shipbuilding Company
San Diego, California

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 14 AUG 2000		2. REPORT TYPE N/A		3. DATES COVERED -	
4. TITLE AND SUBTITLE The National Shipbuilding Research Program, Metal Products and Machinery Effluent Limitation Guidelines Phase 1: Analysis of Current Data				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Surface Warfare Center CD Code 2230-Design Integration Tower Bldg 192, Room 128 9500 MacArthur Blvd Bethesda, MD 20817-5000				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES 13	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

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August 14, 2000

**TO: MICHAEL T. CHEE
NATIONAL SHIPBUILDING RESEARCH PROGRAM**

**FROM: JOHN L. WITTENBORN
JOSEPH J. GREEN**

**RE: ANALYSIS OF DRY DOCKS DATA FOR THE METAL PRODUCTS &
MACHINERY EFFLUENT LIMITATION GUIDELINES RULEMAKING**

We have completed our analysis of the data that the U.S. Environmental Protection Agency ("EPA" or "the Agency") is using to develop effluent limitation guidelines ("ELGs") for the shipbuilding sector of the metal products and machinery ("MP&M") industry. The following memorandum (1) summarizes the results of the data analysis, (2) discusses what we expect the ELG proposal to look like, and (3) identifies the major issues that are likely to arise for the shipbuilding industry during the rulemaking process.

I. DATA ANALYSIS

EPA's primary source of ELG development information comes from sample episode reports ("SERs") conducted at MP&M facilities since 1996. SERs document the results of EPA sampling episodes at the facility during, typically, a five day period, and provide the Agency with wastewater characteristics, treatment effectiveness, and treatment technology data. By extrapolating from this data, EPA then uses it to develop a representative industry profile and effluent limits that are deemed achievable across the industry.

While EPA identified five MP&M facilities as affiliated with the "ships and boats" subcategory, only three of these sites -- the National Steel and Shipbuilding Co. ("NASSCO"), Newport News Shipbuilding ("Newport News"), and Norfolk Naval Shipyard ("Norfolk") -- are shipbuilding facilities with operating dry docks.¹ Jack Waggener of URS/Dames & Moore obtained the SERs for these three facilities and prepared an analysis of the reported results of EPA's sampling activities.² These results were compared to the data previously used by EPA during the Small Business Regulatory Enforcement Fairness Act ("SBREFA") process.

From the EPA data presented during the SBREFA process, it appeared that the Agency was likely to pursue "best available technology" ("BAT")-based regulation of the ships and boats subcategory on the basis of relatively high pollutant equivalent ("PE") loadings. In the SBREFA process, tin accounted for 90 percent of the PE loadings attributable to the industry, and copper accounted for over 5 percent. However, Jack Waggener's review of EPA's SER sampling data indicated that tin was either not detected or present at minimal levels at each of the dry dock operations and that copper levels were relatively low. Similarly, in contrast to the data used in the SBREFA process, based on the SERs, the total PE loadings for the industry appear to be substantially lower than EPA's previous indications.

After issuance of the SBREFA data, there have been indications from EPA that sulfide may be considered a pollutant of concern. In fact, at NASSCO, sulfide was detected at surprisingly high

¹Of the two other facilities, Vickers, Inc. was incorrectly included in the "ships and boats" subcategory and should have been identified as a "stationary industrial equipment" facility; and the Naval Surface Warfare Center (Louisville, Kentucky) is closed and believed to have been an ordnance facility not associated with ship construction.

²A copy of Jack Waggener's data analysis report is attached.

levels, accounting for 159 of the 164 total PE loadings attributed to the facility. The sulfide results, however, are questionable given that there is no direct source of sulfide at the facility. Based on Jack Waggener's analysis, it is possible that EPA's choice of analytical method for sulfide has generated false positive results and skewed the Agency's findings. Nevertheless, even if sulfide detections are included in the analysis, PE loadings for the industry based on the SER data are substantially lower than the levels indicated during the SBREFA process.

In sum, the SER data does not reflect the loadings data cited by EPA in the SBREFA process. While EPA has referenced data collected at additional shipbuilding facilities in correspondence with the industry, this data has not been placed in the rulemaking docket. Further, SER data typically is considered by the Agency as the most reliable source of ELG data, in large part because, unlike most other data sources, they provide paired influent and effluent data. The data from other non-SER facilities -- which likely come from discharge monitoring reports ("DMRs"), section 308 questionnaire responses, or EPA site visits that did not result in an SER -- most likely are not as dependable (from EPA's perspective) as that reflected in the SERs. In addition, as the SERs from NASSCO, Newport News, and Norfolk reflect data from three of the largest shipbuilders in the United States, it is highly unlikely that other data, even if otherwise technically valid, would indicate higher pollutant loadings or be considered more representative of the industry as a whole.³

As noted in our letter dated June 28, 2000, we are continuing to explore these data discrepancy issues with the Agency.

³On the other hand, relying exclusively on data from the three SER facilities also may not be representative of the entire shipbuilding industry. This is an issue that we will raise, if at all, after we see the proposed limits.

II. EXPECTED REGULATORY APPROACH

A. Background

The Clean Water Act ("CWA" or "the Act") established a tiered system of increasingly stringent technology-based effluent limitations, which are established by reference to the level of treatment that is achievable through the application of pollution controls. Section 301 of the CWA required that limits for all sources reflect, as the first level of control, the "best practicable control technology currently available" ("BPT") based on guidelines set under Section 304. BPT requirements set a national floor for effluent treatment for various industrial categories and generally are used to control conventional pollutants, such as oil and grease ("O&G"), total suspended solids ("TSS"), biochemical oxygen demand ("BOD"), chemical oxygen demand ("COD") and pH. In setting BPT, EPA determines the average of the best existing technologies in an industry category. EPA must find that the cost is not wholly disproportionate to the benefits, but a strict cost-benefit or cost-effectiveness analysis is not required.

The next tier of controls reflect a "ratcheting up" from the BPT requirements. The stringency of control depends on the type of pollutant at issue. For "conventional" pollutants, the second level of regulation is termed "best conventional pollutant control technology" ("BCT"). This standard is essentially based on the best available technology, but subject to a test of "cost reasonableness" in which EPA must determine that the costs are reasonably related to the benefits that will accrue from the more stringent level of control.

Toxic and "non-conventional" pollutants are subject to requirements under Section 307 set on the basis of the "best available technology economically achievable" ("BAT"). The BAT

requirement is set on the basis of the single best performing technology in the industry that is deemed to be economically achievable. While no stringent cost-benefit test is required, and some firms may be put out of business by the regulation, EPA engages in a cost-effectiveness analysis that compares the amount of pollutants removed by the regulation in relation to its cost.

B. Dry Docks Under The MP&M ELG

In promulgating ELGs, EPA typically regulates by industry category or sub-category and not by specific operations at a facility within the industry category. For the MP&M ELG, however, due to the substantial variation across the industry, EPA is expected to carve out specific limits for dry docks, railroads, and metal-finishing operations. With respect to dry docks, based on the SER data, it is unlikely that the Agency could promulgate an ELG to regulate priority toxic pollutants (*i.e.*, metals such as tin and copper) employing BAT. In fact, EPA recently has issued revised ELG information which identifies "shipbuilding/dry docks" as a separate subcategory and includes significantly lower estimated PE loadings for the industry. These revised values project, for dry docks that discharge wastewater directly into waters of the United States, PE removals of 111 pounds -- an extraordinarily low amount -- for the entire industry based on application of dissolved air flotation ("DAF") treatment technology, plus the use of certain in-process pollution prevention controls. Based on EPA's estimate that six direct discharging dry dock facilities would be impacted by the proposed rule, the rule would address only 18.5 pounds of PE per facility.

As noted above, in assessing the economic achievability of a BAT regulation, EPA considers the relative cost-effectiveness of the proposed action. Because the PE loadings for the ship and boats sector are quite low, the imposition of costly BAT requirements on the industry would not be

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considered cost-effective. For example, the least cost-effective ELG ever promulgated had an estimated cost effectiveness of \$155 per pound of PE removed. In contrast, EPA projects that imposing BAT on direct dischargers in the shipbuilding/dry docks sector would cost \$3,206 per pound of PE removed. For the recently finalized industrial laundries ELG, in which the Agency withdrew proposed BAT limits in favor of a voluntary pollution prevention program, the projected cost-effectiveness of the proposed BAT rule was \$2,360 per pound of PE removed.

Due to the high cost-ineffectiveness of regulating shipbuilding/dry docks, and based on past ELG practice, we believe that EPA will not issue BAT requirements for this industry sector. We also believe that EPA will decide not to propose ELGs for indirect dischargers (facilities that discharge their wastewater to a publicly owned treatment works ("POTW")) in the shipbuilding/dry docks sector. Recent correspondence with Shari Barash of the Office of Water indicates that EPA apparently agrees with these conclusions and is drafting a proposal along these lines.

Instead, EPA appears set to propose BPT requirements on direct discharging dry dock facilities. While the proposed BPT requirements are expected to be based on the same technology (DAF plus in-process pollution prevention controls), EPA would only address conventional pollutants -- such as BOD, TSS, O&G, and pH -- under this approach. Limits would not be established for metals and other priority toxic pollutants. When regulating in this manner, EPA must only determine that the costs of proposed approach are not wholly disproportionate to the level of pollutants removed. Hence, the detailed cost-effectiveness analysis discussed above is not required.

EPA's suggested approach appears to be an "end-run" around the required cost-effectiveness analysis that most likely would render BAT regulation unacceptable. This is especially true because

the technology underlying the expected BPT requirement is likely to be the same as what would be required under BAT. Accordingly, while only purporting to regulate conventional pollutants, the treatment technology that likely would need to be installed to meet these limits also would treat the priority pollutants that the Agency focused on during the SBREFA process.⁴

The likely proposed BPT-based limits would be the first such regulation of conventional pollutants for the shipbuilding/dry docks industry sector. Despite the fact that BPT-based limits initially were required to be developed by 1977 during the first regulatory phase of the Clean Water Act, our initial research indicates that EPA most likely has the legal authority to promulgate such BPT-based limits at this time, instead of BCT or BAT-based limits. As discussed above, to challenge the BPT regulation on the basis of cost, industry must show that the costs imposed by the regulation are "wholly disproportionate" to the benefits. *See Chemical Mfrs. Ass'n v. EPA*, 870 F.2d 177, 205 (5th Cir. 1989). Accordingly, we intend to examine more fully EPA's projection of the costs and pollutant removals (benefits) attributable to the BPT regulation.

In sum, EPA most likely will not propose BAT-based limits for the shipbuilding/dry docks industry sector that would address metals and other toxic pollutants. Rather, we expect that EPA will propose BPT-based limits to address conventional pollutants at dry dock facilities. This is an issue we will discuss with EPA and OMB in the next few weeks.

⁴While companies are free to employ any method they choose to meet the established limits, installing DAF technology and applying the additional controls upon which EPA based the limits may be necessary in practice.

C. Regulation Of Non-Dry Dock Operations

EPA has indicated that non-dry dock MP&M operations (both direct and indirect dischargers) at shipbuilding facilities will be included in the "general metals" subcategory of the MP&M ELG. This broad category will cover process wastewater discharges from facilities engaged in manufacturing, rebuilding, or maintaining metal parts, products, or machines for use in the MP&M industrial sector. Operations under this subcategory are likely to be subject to BAT-based limits to control metals and other non-conventional and priority pollutants.

In setting these limits, which EPA estimates will apply to almost 30,000 facilities, the Agency will rely on data from numerous industry subsectors beyond the shipbuilding industry. From the SERs analyzed above for dry docks, it appears that only the Newport News report included separate data collected from on-shore/non-dry dock operations. In addition, one facility in the general metals subcategory that was sampled makes parts for ships, but is not a shipbuilding facility. Accordingly, when EPA issues its proposal, it will be important to analyze closely whether the Agency's data for the "general metals" subcategory as a whole is representative of non-dry dock operations at shipbuilding facilities.

Based on discussions with EPA, limits for non-dry dock operations included in the "general metals" category are expected to be based on the application of oil/water separation by chemical emulsion breaking plus chemical precipitation followed by a clarifier, in addition to in-process pollution prevention measures. A low flow cut-off of 1 million gallons per year is anticipated to exempt small facilities from the requirements.

III. STEPS FORWARD

While questions remain regarding EPA's data with respect to pollutant loadings attributed to shipbuilding/dry docks from tin, copper, and other metals, the Agency apparently has shifted its focus to the regulation of conventional pollutants. Thus, in addition to nailing down any lingering EPA concerns over tin in dry dock wastewater, it is imperative to assess more fully the validity of EPA's data with respect to conventional pollutants, particularly the projected loadings and removals for O&G, COD, and TSS, which account for the bulk of the loadings for these pollutants at the three shipbuilding facilities sampled by EPA.⁵ In addition, the legal validity of EPA's proposed BPT approach should be explored further.

Accordingly, as part of the "Phase 1½" project described in our June 28 letter, we expect to address these issues with Shari Barash at EPA, Jim Laity of the Office of Management and Budget ("OMB"), and Kevin Bromberg of the Small Business Administration ("SBA"). OMB and SBA will be particularly helpful in attempting to convince the Agency that regulation of the dry docks sector, either through BPT or BAT, is neither cost-effective nor necessary.

Finally, the shipbuilding industry should consider developing and presenting to the Agency best management practices ("BMPs") or a voluntary pollution prevention program as an alternative to the issuance of numerical discharge limits. In the case of industrial laundries, EPA withdrew proposed ELGs in favor of a voluntary industry pollution prevention plan. In the forthcoming transportation equipment cleaning ELG, EPA will present covered facilities with the option of implementing a POTW-approved "pollutant management plan" or complying with numerical limits.

⁵Interestingly, O&G accounted for the bulk of the conventional pollutant loadings at NASSCO, while COD dominated at Newport News and TSS at Norfolk.

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Based on these precedents, other sectors of the MP&M industry category, including the metal finishers, are developing BMPs as an alternative to numerical limits. This model also may work very well for dry dock operations to address conventional pollutant discharges and metals.

* * * *

If you have any questions regarding EPA's data analysis or the expected ELG proposal, please do not hesitate to contact us.

Attachment

For more information about the
National Shipbuilding Research Program
please visit:

<http://www.nsrp.org/>

or

<http://www.USAShipbuilding.com/>